**4ITRC2 Operating** **System Lab**

**LAB** **ASSIGNMENT – 1**

**Aim:** To install and study Ubuntu OS

**To perform**: Install VMware or Virtual Box and Ubuntu over Windows OS

**Study of Ubuntu OS**

**1. Introduction about linux and Ubuntu:-**

Linux is an open-source, Unix-like operating system kernel that serves as the foundation for various distributions (distros). It was created by Linus Torvalds in 1991 and has since evolved into a widely used OS for servers, desktops, and embedded systems. Linux is known for its stability, security, and flexibility, making it a preferred choice for developers, enterprises, and enthusiasts.

Ubuntu is one of the most popular Linux distributions, developed and maintained by Canonical Ltd. It was first released on October 20, 2004, with the goal of providing an easy-to-use, free, and open-source OS. Ubuntu is based on Debian and follows a predictable release cycle, offering both regular and Long-Term Support (LTS) versions. LTS versions are released every two years and receive five years of support, ensuring stability and security for enterprises and long-term users. Some of the notable Ubuntu versions include:

* **Ubuntu 4.10 (Warty Warthog)** – First official release.
* **Ubuntu 10.04 LTS (Lucid Lynx)** – Major milestone in stability and usability.
* **Ubuntu 16.04 LTS (Xenial Xerus)** – Introduced Snap package support.
* **Ubuntu 20.04 LTS (Focal Fossa)** – Improved security and performance.
* **Ubuntu 22.04 LTS (Jammy Jellyfish)** – Latest LTS version with enhanced features and UI improvements.

Ubuntu is available in different editions, including:

* **Ubuntu Desktop** – Designed for personal computers with a user-friendly GNOME interface.
* **Ubuntu Server** – Optimized for cloud and enterprise environments.
* **Ubuntu Core** – A lightweight, containerized OS for IoT and embedded systems.

**2. Features of Ubuntu**

* **Open Source & Free**: Ubuntu is free to use and distribute, making it accessible to everyone.
* **User-Friendly Interface**: It provides a modern and intuitive GUI through the GNOME desktop environment.
* **Security & Privacy**: Ubuntu is known for its robust security model, offering built-in firewall and encryption features.
* **Frequent Updates**: Regular updates enhance system performance, security, and software compatibility.
* **Lightweight & Efficient:** It can run on low-resource hardware efficiently, making it suitable for older systems.
* **Software Repository**: It includes a vast software repository with applications available via the APT package manager.
* **Customization:** Users can modify the system extensively, from the desktop environment to core functionalities.
* **Strong Community Support**: Ubuntu has a large, active community that provides support, tutorials, and troubleshooting assistance.
* **Compatibility:** It supports a wide range of hardware and software applications.
* **Pre-installed Applications:** Comes with essential software like LibreOffice, Firefox, Thunderbird, and media players.

**3. Difference between ubuntu and windows OS.**

* **License:** Ubuntu is an open-source operating system, meaning it is free to use, modify, and distribute. Windows, on the other hand, is a proprietary OS that requires a paid license for full functionality.
* **Kernel**: Ubuntu uses a Linux-based kernel, while Windows is built on the NT kernel. This affects security, customization, and overall system performance.
* **Security:** Ubuntu is more secure due to its Unix-based architecture, built-in firewall, and strict user permission controls. Windows is more vulnerable to malware and viruses.
* **Customization:** Ubuntu allows users to modify the desktop environment, themes, and functionality. Windows has a fixed user interface with limited customization options.
* **Performance:** Ubuntu is lightweight and efficient, allowing it to run smoothly on older hardware. Windows typically requires more system resources and can slow down over time.
* **Software Installation**: Ubuntu relies on APT, Snap, and Flatpak package managers for software management, while Windows primarily uses executable (.exe) files and the Microsoft Store.
* **Updates:** Ubuntu provides regular and free updates for security and performance improvements. Windows updates often require purchases for major version upgrades.
* **User Preference:** Ubuntu is widely preferred by developers, system administrators, and server operators due to its stability and powerful command-line tools. Windows remains dominant in personal computing and enterprise environments due to its compatibility with commercial applications and its user-friendly interface.